AquaCrop is a model developed by the FAO Land and Water Division that simulates the growth and development of arable crops as a function of water consumption under rainfed conditions, irrigation, or contributions from the water table. It integrates the effect of edaphic and climatic variables, together with management variables, to simulate crop production in response to water in the soil-plant system. AquaCrop has been successfully calibrated and validated in alfalfa, in groups of cultivars without summer latency (GL 8 to 10).

The objective was to compare alfalfa water consumption without latency, in two growing seasons in the city of Marcos Juárez Córdoba province, Argentina.

Data source
- INTA Alfalfa Cultivar Evaluation Network (INTA Marcos Juárez, period 2000/2017)
- Climatic data: temperature, heliophany, wind, relative humidity, precipitation (P). Soil data: textures, salinity, fertility and water table of the EEA INTA Marcos Juárez (O62º6'24.19" - S32º41'52.08")
- Classification in cuts: * by years: dry (P <25% historical period), wet (P > 25% historical period) or normal. * by growing seasons: spring-summer (P / V) and autumn-winter (O / I), for the short latency groups (GL 8-10).
- Application of the Aqua Crop model in alfalfa, calibrated and validated by Martín, B. (2019) to determine the water consumption of the species.

Data on production and water productivity with respect to evapotranspiration showed variations depending on the growing seasons.

**Conclusions**

The interactions between the demands of evaporation, rain, changes in the partition of biomass, contributions of the water table and low temperatures, among others, determined the efficiency of water use in alfalfa.